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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/619,577	07/16/2003	Yasuo Fujii	03500.017414.	7097

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EXAMINER

NGUYEN, THINH H

ART UNIT	PAPER NUMBER
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2861

DATE MAILED: 09/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/619,577	Applicant(s) FUJII ET AL.	
	Examiner Thinh H. Nguyen	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 27, 2005 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imanaka et al. (U.S. 6,243,111) in view of Hawkins. (U.S. 5,532,901)

Imanaka et al. discloses, regarding claim 1, an ink jet head substrate (figure 1) having a plurality of heating elements (401) and an input line (line extending from contact 411) for inputting a pulse width regulating signal regulating a width of a drive pulse to be applied to the heating elements (401) on a base substrate (400) (column 3, lines 40-42, column 6, line 61), wherein a logic circuit (102) for supplying the drive pulse

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to be applied to the heating elements (401) at staggered timing is provided on the input line for inputting the pulse width regulating signal (as taught in column 5, lines 49-65 the staggered timing is preferably 10-200 nanoseconds between heating elements).

Regarding claim 2, the substrate further comprises:

a driver (402) which drives the plurality of heating elements (401) according to image data (column 3, lines 39-40);

a block selection unit (405) for dividing the plurality of heating elements (401) into blocks for a predetermined number of heating elements to drive the heating elements in a time division manner with the divided block as a unit (column 3, lines 42-46);

a drive control logic (403, 404) which controls a drive signal to be given to the driver (402); and

a hysteresis circuit (101) which is provided in an input portion of the drive control logic (403, 404) and makes an input data threshold value different at rising and falling (column 4, lines 4-9).

Regarding claim 6, the substrate is combined with a member (502) to form an inkjet head with liquid paths (505) and discharge pods (500) (figure 5).

Regarding claims 7 and 8, the inkjet head is combined with means for conveying a print medium (P) relative to the head (column 7, lines 63-67) and a carriage (620) that detachably mounts the head to form an inkjet print apparatus (figure 6).

Imanaka et al. does not disclose, regarding claim 1, the input line is provided with an electrostatic protective element.

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Hawkins discloses an electrostatic discharge protection device for a connector associated with an integrated circuit chip of a thermal ink-jet printer which designs to prevent damage in the printer or apparatus with sensitive electrical circuitry (see abstract; col.1, lines 24-31).

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the electrostatic protective device as taught by Hawkins in the printhead circuitry of Imanaka et al. for the purpose of preventing damage in the printer.

4. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imanaka et al. (U.S. 6,243,111) in view of Hawkins et al. (U.S. 5,532,901) as applied to claims above, and further in view of Ghozeil et al. (U.S. 6,375,295 B1).

Imanaka et al. discloses, regarding claim 4, that the substrate includes a serial input/parallel output shift register (404) and a latch circuit (403) temporarily storing data output from the shift register (404), and the heating elements (401), the driver (402), the input line, the block selection unit (405), the shift register (404) and the latch circuit (403) are formed on the substrate (figure 1) and the logic circuit (102) is formed by a film forming process identical with that for the drive control logic including the shift register (404) and latch circuit (403) (column 6, lines 57-64).

Imanaka et al., as modified by Hawkins, fails to disclose, regarding claims 3-5, that the logic circuit (102) comprises CMOS inverters of even number stages arranged serially.

Ghozeil et al. provides teachings relevant to control circuits for driving ink jet heaters (column 1, lines 6-20) and teaches that when forming delay circuitry (such as logic circuit 102 of Imanaka et al.) CMOS inverters of even number stages (figure 7) provide advantages of reduced size and contribute to the reduction of electromagnetic interference between drive elements (column 1, lines 52-55, column 4, lines 30-47).

It would have been obvious to a person of ordinary skill in the inkjet art at the time of the invention to use the CMOS inverter delay logic as taught by Ghozeil et al. in place of the buffer delay logic elements in logic circuit 102 taught by Imanaka et al. The motivation for doing so would have been to achieve advantages of reduced size and reduction of electromagnetic interference as taught by column 1, lines 52-55 and column 4, lines 30-47 of Ghozeil et al.

Pertinent Prior art

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 5,371,395 to Hawkins discloses Electrostatic discharge protection (ESD) circuitry.

Patent Application Information Retrieval (PAIR)

6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For

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more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Contact Information

7. Any inquiry concerning this communication should be directed to examiner Thinh Nguyen at telephone number (571) 272-2257. The examiner can generally be reached Mon-Wed, and Thurs from 9:00A – 5:00P. The official fax phone number for the organization is (571) 273-8300. The examiner supervisor, Dave Talbott, can also be reached at (571) 272-1934.

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 308-1782.



Thinh Nguyen
August 30, 2005

Thinh Nguyen
Primary Examiner
Technology Center 2800